LV diastolic function were assessed by Doppler echocardiographic analysis of the diastolic transmitral flow: the maximal early-(V_E) and late-(V_A) velocity of diastolic filling; the E/A-ratio; the acceleration and deceleration time (DT, m/s) and the isovolumetric relaxation time (IVRT, m/s). Furthermore the LV muscle mass (LVMM; g), the systolic shortening of the LV diameter (FS, %) and the relative systolic wall-thickness (WD/ESD) were calculated.

Results: No differences were found in the LVMM (187 ± 48 g vs 171 ± 54 g, ns) and the WD/ESD (0.86 ± 0.21 vs 0.85 ± 0.20, ns). P with arterial hypertension had a decrease in the early diastolic filling (0.53 ± 0.10 vs 0.79 ± 0.12 m/s, $p < 0.01$), an increase in the atrial filling (0.74 ± 0.13 vs 0.56 ± 0.12 m/s, $p < 0.01$) and a prolonged isovolumetric time of relaxation (123 ± 8 vs 87 ± 4 ms, $p < 0.01$) compared to C.

Conclusions: This study indicates that P with arterial hypertension have an abnormal pattern of diastolic filling. Doppler echocardiography is useful in identifying diastolic filling abnormalities in P with arterial hypertension. Even asymptomatic P with arterial hypertension and normal systolic LV function, suffer a LV diastolic dysfunction. A disorder of LV diastolic filling parameters occurs even before an increase of LV wall-thickness is documented.

2:30

889-3 Does Isolated Diastolic Dysfunction Exist in Hypertensive Patients With ECG Determined Left Ventricular Hypertrophy: The LIFE Study

K. Wachtell, V. Papademetriou, G. Smith, E. Gerdts, M. Nieminen, J.N. Bella, J. Rokkedal, R.B. Devereux. *Glostrup University Hospital, Denmark; The New York Hospital-Cornell Medical Center, NY, USA*

Background: It has been postulated that patients with hypertensive hypertrophic cardiomyopathy have isolated diastolic dysfunction and normal systolic LV function. Furthermore it has been shown that LV midwall mechanics maybe impaired in hypertensive patients with normal or supranormal LVEF, however whether impaired LV relaxation is related to depressed systolic contractility and midwall shortening is currently unknown.

Methods: We use echocardiography to evaluate 333 unmedicated hypertensive patients with LV ejection fraction >60% (average end-echo BP 164/91 mmHg) at enrollment in the LIFE Study: 239 (72%) had IVRT >100 msec, consistent with impaired relaxation.

Systolic midwall shortening and contractility were measured.

Results:

	IVRT ≤ 100 msec	IVRT > 100 msec	P
LVMI	117.7 ± 23.5	119.5 ± 26.0	NS
Relative wall thickness (RWT)	0.43 ± 0.005	0.45 ± 0.006	0.038
Midwall fractional shortening (%)	17 ± 1	16 ± 2	0.039
Circumferential endsystolic stress	140.3 ± 46.6	136.2 ± 39.7	NS
Stress adjusted midwall shortening	99.40 ± 12.9	95.80 ± 13.1	0.024

Conclusion: Patients with preserved LVEF and increased IVRT has significantly reduced LV systolic midwall function and as expected increased RWT.

2:45

889-4 Left Ventricular Structure and Function in Patients With Isolated Systolic or Diastolic Hypertension

V. Papademetriou, B. Dahlof, P. Narayan, J. Bella, E. Gerds, M. Niemenen, J. Nielsen, R.B. Devereux. *VA & GTMC, Wash. DC, Cornell U, NY, USA*

Background: Correlates of LV mass have been derived from either normotensives or pts with diastolic hypertension (DHT DBP >90 mm Hg). Data comparing pts with isolated systolic hypertension (ISH, SBP >140, DBP <90 mm Hg) to pts with DHT is lacking.

Methods: We compared LV geometry and function of 132 pts with ISH to 423 pts with DHT. All pts were LIFE participants & met ECG LVH criteria (Cornell or Sokolow-Lyon). Pts were evaluated off medication. BP was measured at time of echo.

Results: Pts in both groups had similar height, weight, body mass index and heart rate. Compared to pts with DHT, pts with ISH had lower SBP (164 vs 176, P < 0.001) DBP (81 vs 100 mm Hg, P < 0.000) and mean BP (108 vs 125 mm Hg, P < 0.000). Indexes of LV geometry were similar between the two groups (ISH vs DHT: LV mass 233/233 g, LVMI 125/123 g/m2, IVS 1.18/1.18 cm, PWT 1.11/1.10 cm, LVIDD 5.15/5.21 cm and LVIDS 3.35/3.43 cm). Pts with ISH had lower circumfrensial end systolic stress (153 vs 172 P = 0.002). All other indexes of systolic and diastolic function were similar between the two groups. Pts with ISH had lower total peripheral resistance (1833 vs 2119, P < 0.000). Using multivariate analysis LV mass correlated with SBP (p = 0.033), Doppler stroke volume (STVOL) (P < 0.000) and stress adjusted midwall shortening (MWS) P < 0.000). Relative wall thickness correlated with STVOL (P = 0.003) & stress adjusted MWS (P < 0.000) but not with SBP.

Conclusions: 1) Despite significant differences in SBP, DBP, mean BP, & TPR, patients with ISH & DHT had similar LV structure, & diastolic LV function; 2) SBP, STVOL & stress adjusted MWS are strong predictors of LV mass.

3:00

889-5 Cardiac and Hemodynamic Features of Hypertension Associated With Diabetes: The Strong Heart Study

J.N. Bella, R.B. Devereux, M.J. Roman, D. Fishman, M. Paranicas, E.T. Lee, R.R. Fabsitz, T.K. Welty, B.V. Howard. *Cornell Medical Center, NY, NY, University of Oklahoma School of Public Health, Oklahoma City, OK, Indian Health Service, Rapid City, SD and Medlantic Research Institute, Washington, DC, USA*

Background: Although the association of hypertension (HTN) with diabetes (DM) is well established, the cardiac features and hemodynamic profile of patients with DM and HTN have not been elucidated.

Methods: Echocardiograms were analyzed in 1,163 participants of the Strong Heart Study with neither DM nor HTN, 707 with HTN alone, 625 with DM alone and 922 with both HTN and DM.

Results: Patients with HTN + DM had larger left ventricular (LV) mass (gender-adjusted mean = 175 g) than those with HTN (mean = 167 g) or DM (153 g) or neither (149 g, $p < 0.001$ for all comparisons. Those with HTN + DM and those with HTN had higher cardiac output (CO) than NL (gender-adjusted mean = 4.9 ± 1.1 and 4.9 ± 1.2 vs. 4.7 ± 1.1 l/min, both $p < 0.001$). Participants with HTN + DM or with HTN had higher peripheral resistance (TPR) than NL (gender-adjusted mean = 1,759 and 1,753 vs. 1,662 dynes/s/cm $^{-5}$/m^2, both $p < 0.001$). Participants with DM had normal CO and TPR.

Conclusion: Adults with HTN + DM have greater LV mass but similar systemic hemodynamics compared to HTN without DM; both HTN alone and DM alone have increased LV mass.

3:15

889-6 Abnormal Left Ventricular Structure and Function in Pregnancy Complicated by Pre-Eclampsia

D. Degli Esposti, C. Borghi, A. Cassani, S. Crippa, S. Bacchelli, V. Immordino, S. Boschi, L. Bovicelli, E. Ambrosioni. *Department of Internal Medicine and IInd Department of Obstetric and Gynaecology, University of Bologna, Italy*

Pre-eclampsia (PE) is a clinical syndrome associated with an high risk of CV maternal complications both acutely and long-term. The aim of the study was to assess left ventricular (LV) structure and function in 25 patients with PE when compared with 29 normotensive pregnant women (NP) and 10 normotensive non-pregnant women (NN). Patients were studied by evaluating 1) Demegraphic characteristics, 2) systolic and diastolic blood pressure (SBP, DBP), 3) LV mass (LVM) and volumes (LVEDV, LVESV), ejection fraction (EF%), E/A ratio (E/A), iso-volumetric relaxation time (IRT), Cardiac output (CO), total peripheral vascular resistance (TPVR) by 2-D echo-Doppler evaluation, 4) Plasma levels of BNP, ANP, PRA by radioimmunoassay. PE showed an increase in SBP, DBP associated with significant abnormalities of both LV structure and function (* P < 0.05, † P < 0.01 PE vs NP and NN).

	BP	LVM	LVEDV	LVESV	EF%	E/A	ANP
PE	140/92†	204*	117.1*	40.7*	66*	1.3*	74.5†
NP	103/60	175	102.1	32.6	68	1.7	39.8
NN	114/62	146	102.9	29.5	73	1.7	

The present data suggest that PE can be associated with an increased LVM, an impaired LV systolic and diastolic function and a peculiar bio-humoral profile that could contribute to both acute and long-term CV complications in PE.